

Remarks

The Office Action dated October 28, 2008, has been received and carefully reviewed. The preceding amendments and the following remarks form a full and complete response thereto. Claim 1 is amended to include further limitations. Support for these amendments can be found in paragraphs 0011 and 0053, Fig.3c and 5 and their respective description in paragraphs 0051-0053 and 0055-0057). Claims 2, 3, 5, 6, 61 and 62 are amended to overcome the formality objections. No new matter is added. Claims 1-69 are pending in the application of which claims 1-6, 51-53, 55, 56, 58, 59, 61, 62, 63, 65 and 68 are currently submitted for reconsideration.

An objection was made to the originally filed drawings as allegedly failing to comply with 37 C.F.R. § 1.84 (p)(5), on the ground that they do not include reference characters A and B in Fig. 3a which had been mentioned in the description. The Applicants hereby amend the relevant part of the Specification. Specifically, the Applicants replace the references of the starting point A and the end point B in paragraph 0047 with new references -- C -- and -- D --, respectively. Accordingly, the objection should be withdrawn.

An objection was made to the Abstract for the reason that it contained an implied expression, "[t]he invention relates to a." The Applicants hereby amend the Abstract as suggested by the Examiner. Accordingly, Applicants request that the objection be withdrawn.

Claims 1-6, 51-53, 55-56, 58-59, 61-63, 65 and 68 stand objected for the reason that there is insufficient antecedent basis for the limitations in claims 1, 2, 3, 5 and 6.

Claims 4, 51-53, 55-56, 58-59, 61-63, 65 and 68 were rejected as inheriting the deficiencies of claim 1 upon which they are dependent. In response, the Applicants hereby amend “the grating elements” in claim 1, 2, 3 and 5 to “the at least one grating element.” The Applicants also amend “the help” and “the coordinates” in claim 6 to “a help” and “coordinates”, respectively. Also, claims 3, 5 and 6 are amended to depend on claim 2 from the original claim 1. The Applicants submit that the objections based on insufficient antecedent basis are now overcome and request the objections be withdrawn.

Claim 6 was also objected to for the reason that the phrase “can be” rendered the claim indefinite. The Applicants hereby amend the phrase “can be” to “are to be.” Accordingly, the Applicants request that the objection be withdrawn.

Objections were made to claims 58, 61 and 62 for formality defects. The Applicants hereby amend “a security element” in claims 58 and 61 to “the security element.” The Applicants also amend “a security paper” in claim 62 to “the security paper.” The Applicants submit that the objections based on formality defects are now overcome.

Claims 1-2, 51-53, 55-56, 58-59, 61-63 and 65 were rejected under 35 U.S.C. §102(b) as being allegedly anticipated by Japanese Patent Publication No. 09-230122 to Takahashi (hereinafter “Takahashi”). The Applicants traverse the rejection and submit that Takahashi does not disclose the subject matter of claims 1-2, 51-53, 55-56, 58-59, 61-63 and 65.

Claim 1, upon which claims 2, 51-53, 55-56, 58-59, 61-63 and 65 directly or indirectly depend, defines a method for producing a grating image which has at least one grating field with visually recognizable, optically variable properties. Each of the grating fields includes grating elements that are produced by means of a writing apparatus. Claim 1 further recites a working field having fixed size predetermined by the writing apparatus and which can be moved to different positions of a substrate to be inscribed. The method also includes the steps of: a) determining at least one uniform grating element which completely lies within one working field; b) defining a sequence of working fields with respect to the grating field, in each of which the at least one grating element is to be produced continuously without interruption along its entire length by means of the writing apparatus; c) moving to the working fields by relative movement of a carrier, on which is located the substrate, and the writing apparatus; and d) writing the at least one grating element into the substrate with the writing apparatus within the respective working fields.

Takahashi discloses a diffraction grating pattern 18 with a dot 16 as a unit which is plotted by an electron gun 50. The diffraction grating patterns 18 are plotted, dot by dot, by moving the X-Y stage 20. (English Abstract of Takahashi.) Dot data are inputted to the computer to determine the pitch of the diffraction gratings so as to reproduce the colors of the dots. The direction and curvature of the diffraction gratings are determined and the plotting of the diffraction gratings of the dots is executed to complete the plotting. The pitch at which the dots are arranged in these diffraction grating patterns 18 is specified to $\leq 0.1\text{mm}$.

Takahashi fails to disclose the step of defining a sequence of working field of the writing apparatus which has a fixed size predetermined by the writing apparatus, as defined by claim 1. According to the invention defined by claim 1, in order to expose only those grating lines which along their entire length lie within the reach of the electromagnetic deflection of the electron beam, working fields are defined towards which the table can be moved (see, paragraph 0011). The sequence of working fields according to the present invention does not correspond to a sequence of "dots" according to Takahashi. The working fields of the present invention represent a feature of the writing apparatus, which determines the size of the working fields (see, paragraph 0011 and the first sentence of paragraph 0053 of the Specification), which are navigated to different positions of the substrate (see, e.g., paragraph 0011). In contrast, the "dots" of Takahashi represent a feature of the grating field and have a size and a position which is unalterably predetermined by the grating field, not the writing apparatus.

Thus, Takahashi fails to disclose each and every element of claim 1. Claims 2, 51-53, 55-56, 58-59, 61-63 and 65, which directly or indirectly depend on claim 1, are patentable over Takahashi at least for the same reason. The rejection reason against these claims is thus improper, and the Applicants respectfully request that the rejection under 35 U.S.C. § 102(b) be withdrawn.

Claims 3-6 were rejected under 35 U.S.C. § 103(a) as being allegedly obvious over Takahashi in view of U.S. Patent No. 5,335,113 issued to Jackson et al. (hereinafter "Jackson"). Claims 68 was rejected under 35 U.S.C. §103(a) as being

allegedly obvious over Takahashi in view of WO 91/03747 issued to (hereinafter "Lee"). Applicants traverse the rejections.

Claims 3-6 depend from claim 1 and are therefore patentable over Takahashi for at least the same reasons discussed above. Further, as outlined above, Takahashi does not disclose the "working field" of the writing apparatus nor the size thereof. Takahashi does not disclose the problems which might arise due to the limited size of the working field. Hence, Takahashi cannot give a hint towards a writing process, which is determined based on the working field of the writing apparatus of the size thereof.

In particular, Takahashi does not give a hint towards a determination of uniform grating elements which completely lie within a working field. The fact that the figures of Takahashi exhibit uniform grating elements does not imply that these lie completely within one working field or that they are selected based on this property. Also, the teaching of Takahashi does not suggest defining a sequence of working fields with respect to the grating field since not even working fields have been defined. Jackson fails to cure the deficiencies of Takahashi.

Jackson concerns a security features for bank notes based on diffraction structures, which also works with heavily crinkled bank notes (see, lines 8-27, col. 1). Jackson, however, fails to disclose even the concept of working field which is determined by the writing apparatus. Moreover, Jackson is silent on a grating element which is to be produced continuously without interruption within a specified boundary.

Lee is directed to diffraction gratings which may be used as security devices, for example, in currency notes and credit cards. Lee's disclosure mainly focuses on

generating grating image diffraction pattern from a non-diffracted original image. Lee, however, is also silent on the features of claim 1 such as continuous grating element and fixed sized working fields.

In sum, each of Jackson and Lee fails to disclose the step of defining a sequence of working field of the writing apparatus which has a fixed size predetermined by the writing apparatus. The Applicants, therefore, submit that both Jackson and Lee fail to cure the deficiencies of Takahashi regarding claim 1, and thus claims 3-6 and 68 which are dependent upon claim 1 are also patentable over the cited references.

In view of the above, all objections and rejections have been sufficiently addressed. The Applicants thus submit that the application is now in condition for allowance and request that claims 1-6, 51-53, 55, 56, 58, 59, 61, 62, 63, 65 and 68 be allowed and this application passed to issue.

In the event that this paper is not timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account No. 02-2135.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the Applicant's undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

Respectfully submitted,

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